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IS 11032 (1984): Rotary Screen-type Precleaner [FAD 20: Agriculture and Food Processing Equipments]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS : 11032 - 1984

Indian Standard

SPECIFICATION FOR
ROTARY SCREEN-TYPE PRECLEANER

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INDIAN STANDARDS INSTITUTION
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NEW DELHI 110028

Indian Standard

SPECIFICATION FOR ROTARY SCREEN-TYPE PRECLEANER

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AMENDMENT NO. 1 DECEMBER 1995
TO
IS 11032 : 1984 SPECIFICATION FOR ROTARY
SCREEN-TYPE PRECLEANER

(*Page 4, clause 3.1*) — Substitute 'IS 2062 : 1992' for 'IS 226 : 1975' and the corresponding title in the footnote as 'Specification for general structural purpose (*fourth revision*)' and 'IS 210 : 1993' for 'IS 210 : 1978' and the corresponding title in the foot-note as 'Specification for grey iron castings (*fourth revision*)'.

(*Page 7, clause 9.3, line 3*) — Substitute 'IS 7201 (Part 1) : 1983' for 'IS 7201 : 1974' and the corresponding title in the footnote as 'Method of sampling of agricultural machinery and equipment : Part 1 Hand tools and hand operated/animal drawn equipment (*first revision*)'.

(FAD 51)

Reprography Unit, BIS, New Delhi, India

**AMENDMENT NO. 2 MARCH 2007
TO
IS 11032 : 1984 SPECIFICATION FOR ROTARY
SCREEN-TYPE PRECLEANER**

[Page 4, clause 3.1, line 2 (*see also Amendment No. 1*)] — Substitute
'IS 2062 : 1999' for 'IS 2062 : 1992'.

(Page 4, footnote marked*) — Substitute the following for the existing:

'*Specification for steel for general structural purposes (*fifth revision*).'

(FAD 20)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR ROTARY SCREEN-TYPE PRECLEANER

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 31 July 1984, after the draft finalized by the Agricultural Produce Processing Equipment Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Cleaning of grain is an important processing operation which upgrades the quality of grains and raises its value. Manual sieving is a common method of cleaning grains in grain markets/*mandies*. This process is time consuming and also expensive. Mechanical cleaning is fast, precise and economical. Vibratory sieve type cleaners, which have been used so far, were found not suitable for cleaning grains prior to procurement in grain markets due to their low output in relation to the energy consumption per unit mass. Rotary screen type precleaners were developed to overcome these problems and this type of precleaners are now being manufactured and used in the country. A need was, therefore, felt to prepare an Indian Standard to guide the manufacturers and the users for production and procurement of quality precleaners.

0.3 In preparation of this standard, assistance has been derived from the College of Agricultural Engineering, Punjab Agricultural University, Ludhiana.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard specifies material, construction, performance and other requirements of rotary screen-type grain precleaners.

*Rules for rounding off numerical values (revised).

2. TYPES

2.1 For the purpose of this standard, the rotary screen-type precleaners shall be of the following two types:

- a) Single-screen type, and
- b) Double-screen type.

3. MATERIAL

3.1 The material used for various components of the cleaner (see Fig. 1) shall be mild steel (see IS : 226-1975* or IS : 1977-1975†) or cast iron (see IS : 210-1978‡).

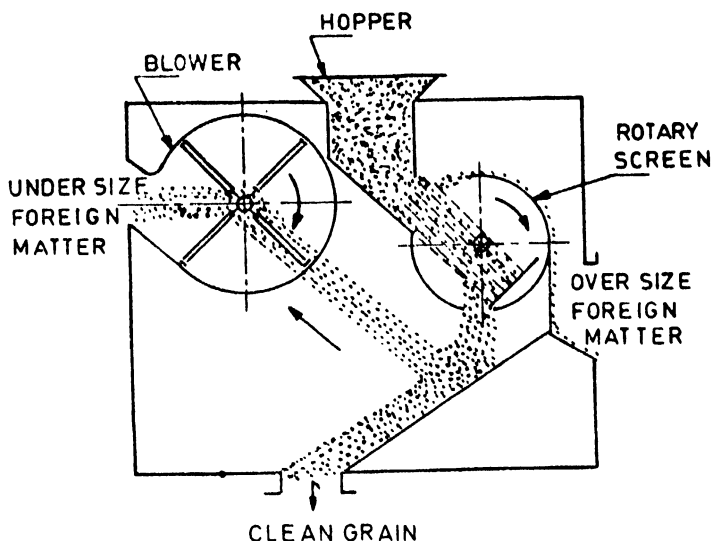


FIG. 1 FLOW DIAGRAM OF ROTARY SCREEN-TYPE PRECLEANER

4. CONSTRUCTIONAL REQUIREMENTS

4.1 Frame — The frame shall be made of suitable size mild steel angle section and shall be covered with mild steel sheet.

4.2 Hopper — It shall be provided with a feed regulating device. The minimum thickness of the sheet used for the hopper shall be 1.6 mm.

*Specification for structural steel (standard quality) (*fifth revision*).

†Specification for structural steel (ordinary quality) (*second revision*).

‡Specification for grey iron castings (*third revision*).

4.3 Rotary Screens — One or two rotary screens depending on the type of the cleaners shall be used. In case of single screen, the screen shall rotate in clockwise direction and in case of double screen, the screens shall rotate in opposite direction. The speed of rotation shall be 20 rev/min.

4.4 Blower — If fitted it shall be provided with a control to regulate air flow rate.

4.5 Transmission Drive — A suitable system for transmitting the power shall be provided. It may consist of V-belt and pulley or sprocket and chain.

4.5.1 Transmission guards shall be provided to prevent accidental contact of persons or parts of clothing being caught in the transmission system, unless the system is so constructed or placed as to be safe without guards.

4.5.2 The guards shall be so designed as not to hinder in easy adjustment, servicing and operation of the cleaner.

4.5.3 It is preferable that all guards shall be either permanently attached or firmly secured to prevent their removal without the aid of tools. The servicing and adjustments should be possible without complete removal of the guards.

4.5.4 The guards shall have sufficient strength to support load of 1 200 N applied at any point over an area of 0.1 m² without permanent set.

4.6 Shafts — The shafts shall be supported on ball bearings at both the ends.

5. PERFORMANCE REQUIREMENTS

5.1 The precleaner shall be operated at no load in accordance with the method given in 7.1 of IS : 5718-1980*. During the no load run, the visual observation shall not show the following:

- a) Presence of any marked vibration during operation,
- b) Presence of undue knocking or rattling sound,
- c) Frequent slippage of belts,
- d) Non-smooth running of shafts in their respective bearings,
- e) Any marked wear or slackness in any component,
- f) Any marked rise in bearing temperature, and
- g) Vibration in blower running.

*Test code for seed cleaners (*first revision*).

5.2 The rated input capacity in q/kWh energy consumed with 5 and 10 percent foreign matter in the wheat and paddy grain shall be declared. When tested in accordance with the method given in IS : 5718-1980* or IS : 8440-1977† the declared value shall not differ by 5 percent. The cleaning efficiency shall be not less than 80 percent.

5.2.1 During and after capacity test, the visual observations shall not indicate the following:

- a) Observations given under 5.1 (a) to (g)
- b) Non-smooth flowing of material through different components;
- c) Any marked wear, deformation and break-down;
- d) Frequent loosening of fasteners; and
- e) Leakage of grain from the cleaner while in operation.

5.3 When tested in accordance with 8.2 of IS : 8440-1977†, no breakdown shall occur in any part of the cleaner.

6. OTHER REQUIREMENTS

6.1 Provision for belt tightening shall be made.

6.2 Arrangement for lubrication of bearings shall be made.

6.3 Provision for easy transportation and towing with tractor shall be provided.

6.4 The cleaner shall be provided with the operators-manual (see 4.2 of IS : 8132-1983‡).

7. WORKMANSHIP AND FINISH

7.1 Welding used for joining different components shall not be porous (see IS : 816-1969§).

7.2 Any sharp corners and protruding fasteners shall be avoided.

7.3 Components shall be free from cracks, pits, burrs and other visual defects which may be detrimental for their use.

7.4 The components shall be painted with the rust preventive paints.

*Test code for seed cleaners (*first revision*).

†Test code for paddy cleaners.

‡Guidelines for presentation of operator manuals and technical publications for agricultural tractors and machineries (*first revision*).

§Code of practice for use of metal arch welding for general construction in mild steel (*first revision*).

8. MARKING AND PACKING

8.1 Marking — Each cleaner may be marked with the following particulars:

- a) Manufacturer's name and recognized trade-mark;
- b) Model, batch, code or serial number (if any);
- c) Power rating, kW; and
- d) Rated input capacity.

8.1.1 Each cleaner may also be marked with the ISI Certification Mark.

NOTE—The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors may be obtained from the Indian Standards Institution.

8.2 Packing — The cleaner shall be packed as agreed to between the purchaser and the supplier for safe handling in transit.

9. SAMPLING AND TESTS

9.1 At least one cleaner of a particular type and model shall be tested under type testing for the requirements of this specification.

9.2 Each cleaner shall be tested under routine testing for the following:

- a) Requirements given under 5.1, 6, 7 and 8.1, and
- b) Constructional requirements given under 4.

9.3 For lot acceptance the method of sampling and criteria for conformity shall be as agreed to between the purchaser and the supplier (see IS : 7201-1974*).

*Method of sampling of agricultural machinery and tractors.

INDIAN STANDARDS

ON

AGRICULTURAL PRODUCE PROCESSING EQUIPMENT

IS:

- 1511-1979 Blades for manually-operated chaff cutter (*second revision*)
- 1973-1981 Sugarcane crushers (*second revision*)
- 3939-1979 Maize sheller, manually-operated (*first revision*)
- 4596-1963 Glossary of terms relating to oil expellers
- 5223-1969 Methods of test for evaluation of performance of oil expellers
- 5224-1978 Specification for oil expellers (*first revision*)
- 5718-1980 Test code for seed cleaners (*first revision*)
- 6983-1973 Rollers and axles for sugarcane crushers
- 6997-1973 Test code for sugarcane crushers
- 7051-1973 Power maize shellers
- 7052-1973 Test code for power maize shellers
- 7897-1975 Test code for chaff cutter
- 7898-1981 Manually-operated chaff cutter (*first revision*)
- 8108 (Part 1)-1984 Test code for grain dryers: Part 1 Selection and preparation for test (*first revision*)
(Part 2)-1984 Test code for grain dryers: Part 2 Method of test for continuous flow dryers
- 8420-1977 Glossary of terms relating to grain dryers
- 8427-1977 Rubber rolls for paddy dehusker
- 8440-1983 Test code for paddy cleaners
- 9049-1979 Test code for paddy dehusker, rubber roll type
- 9555-1980 Rice polisher
- 9981-1981 Glossary of terms relating to agricultural produce processing equipment
- 10048-1981 Rice polisher
- 10341-1982 Recommendations size and capacitors for oil expellers (single chambers)
- 10507-1983 Paddy separator
- 10520-1983 Emery stones for flour mills



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